PostScript

LETTERS

Legibility of doctors' handwriting is as good (or bad) as everyone else's

Doctors have a reputation for illegible handwriting. Is such notoriety deserved?

Methods

With approval of the Kansas University Human Subjects Committee, we recruited 10 right-handed men and 10 right-handed women with seven different occupations (accountant, attorney, automobile technician, builder, engineer, doctor and scientist). Participants wrote in cursive ''The quick brown fox jumps over the lazy dog'' in <17 s.

The number of malformed individual letters was judged by an investigator, blinded to participant characteristics.[1] Four blinded investigators independently rated the global legibility of the writing samples using a four-point scale: poor, fair, good and excellent.[2] The power to detect a 25% difference was 0.8.

Results

No significant difference was seen in age, but there was difference in education (table 1). Intraobserver (κ 0.35) and interobserver (κ 0.23) agreements were good ($p<0.001$), as was correlation between the scoring methods ($r -0.75$; $p<0.001$).

Across occupations, no differences in legibility were observed with either scoring methods, even after adjustment for age and education. In all, 40% of the men's handwriting was illegible (score<2.0) compared with 20% of the women's ($p = 0.057$).

Comment

In a prospective study of 209 healthcare professionals, using a timed standard sentence and scoring for global legibility (1–4 scale), legibility of doctors' handwriting was not different from that of administrators.[2] In a comparison of 200 doctors and 500 community volunteers who wrote a standard sentence, doctors wrote more malformed individual letters.[1] A prospective study using computer scoring showed that doctors wrote poorly formed letters than other health professionals.[3]

Ours is the first study to compare the legibility of doctors' handwriting, with that of several other non-healthcare occupations and to adjust for age, education and, most importantly, sex. Our study agrees with Berwick and Winikoff[2] that doctors' handwriting is no less legible than that of other occupations.

This lack of difference in handwriting legibility does not excuse doctors from responsibility for clarity and accuracy in their written communication. As handwriting illegibility correlates with prescription error rates and misinterpretation of orders,[4] doctors should strive to have ''better'' handwriting than everyone else or embrace the computerisation of medical records and orders.

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Effect of European working time directive on a stroke unit

The European working time directive (EWTD) was introduced into National Health Service hospitals for doctors in training in August 2004.[1] Mounting evidence had shown that fatigue in doctors contributes to adverse events in patients.[2] However, the implementation of potential quality improvements requires an understanding of whole healthcare systems.[3] Before the introduction of the EWTD, our stroke ward had a resident senior house officer who provided weekday care, ensuring that all patients were medically reviewed on a daily basis. This is required, as patients with acute stroke are at high risk of many complications.[4 5] We assessed junior doctors' weekday attendance on the stroke unit after the introduction of the EWTD.

The presence of junior doctors on the 12-bed unit during weekdays was prospectively monitored by the nursing staff over a 3-month period (between 1 November 2005 and 31 January 2006). Only weekday attendances were assessed, as weekends and statutory holidays were covered on an on-call basis, similar to the ward cover before the introduction of the EWTD.

During the study period, 82 patients (43 women and 39 men) of mean (SD) age 72.8 (15.6) years were admitted to the ward. Programme Foundation 1 doctors or senior house officers did not attend the ward on 33 weekdays (52%), over the study period of 64 days. No specialist registrar was present on the ward for 27 weekdays (42%). On 18 weekdays (28%), no junior doctor attended the ward.

This study shows an alarming change in junior doctor practice in one ward in a district general hospital after the introduction of the EWTD. The drop of 28% in weekday attendance raises important service and training issues. This is particularly true of stroke care, as stroke outcomes in the UK and Ireland already appear to be less favourable than those in North America and northwest Europe.[6] Even before the introduction of the EWTD, it was recognised that there was insufficient evidence to estimate the effect of any intervention to limit the working hours of doctors.[7]

Surgeons and anaesthetists have documented a decrease in training capacity in terms of procedure counts after the introduction of the EWTD.[8 9] Recent changes in the UK postgraduate system combined with the EWTD may have halved the total number of hours of postgraduate ''training''.[10] Our study implies that follow-up of medical patients or continuity of care, which is recognised as an important service quality of junior doctors and as an integral part of training, may be

Table 1 Participant characteristics and handwriting scores

	Attorney	Builder	Scientist	Engineer	Doctor	Accountant	AutoTech	p Value
Sex (M/F)	10/10	10/10	10/10	10/10	10/10	10/10	10/10	
Age* (years)	41 (10)	34 (7)	42 (7)	29 (6)	36 (10)	35 (12)	29 (9)	0.313
Education* (years)	20 (2)	13 (1)	22 (2)	17 (1)	22 (2)	17 (1)	14 (2)	<0.001
Poorly formed letters*	11.3 (5.0)	9.4 (6.2)	8.8 (3.2)	8.6 (7.9)	8.5 (5.2)	7.0 (6.7)	5.8 (3.9)	0.705
Median score (1–4; range)	2.0 (1.2–2.8)	2.0 (1.6–3.0)	2.1 (1.2–3.0)	2.3 (1.0–3.2)	2.4 (1.6–3.0)	2.6 (1.0–3.0)	2.6 (1.2–3.2)	0.076
Illegible (<2.0)	40%	30%	40%	35%	25%	15%	30%	0.619
Median score (1–4)								
Male	2.0	2.0	2.1	1.8†	1.9†	2.3†	1.9†	
Female	2.2	2.3	2.1	2.9	2.6	2.8	2.6	
Pairwise p value	0.439	0.114	0.424	0.003	0.020	0.038	0.020	<0.001

AutoTech, automobile technician; M/F, male/female. *Data are presented as mean (standard deviation).
†Pairwise comparison, p<0.04.